

(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 877 119 A3

(12)

# EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
10.02.1999 Bulletin 1999/06

(51) Int. Cl.<sup>6</sup>: D21G 1/00, D21F 3/02

(43) Date of publication A2:  
11.11.1998 Bulletin 1998/46

(21) Application number: 97115501.5

(22) Date of filing: 08.09.1997

(84) Designated Contracting States:  
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE

(30) Priority: 06.05.1997 US 851966

(71) Applicant:  
ALBANY INTERNATIONAL CORP.  
Albany, New York 12204 (US)

(72) Inventors:  
• Davenport, Francis L.  
Ballston Lake, N.Y. 12019 (US)  
• Dutt, William H.  
Wynantskill, N.Y. 12198 (US)

(74) Representative: Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö (SE)

## (54) Belts for compliant calendering

(57) A calender belt for the compliant calendering of a paper web includes an endless base substrate, a staple fiber batt attached to at least the outside of the endless base substrate, and a polymeric resin material totally impregnating the fiber/base composite structure comprising the endless base substrate and the staple fiber batt to a substantially uniform depth. That depth may be such that the polymeric resin material does not reach the base substrate, or partly or completely impregnates the base substrate. A layer of polymeric

resin material is built up upon the staple fiber material to a predetermined thickness. Once the polymeric resin material is cured, it is ground to a desired smoothness without exposing any fiber on the ground surface. That the penetration of the polymeric resin material into the staple fiber batt, and possibly into the base substrate, is to a uniform depth enables the calender belt to provide a uniform pressure pulse as it passes with a paper web through the nip in a compliant calender.

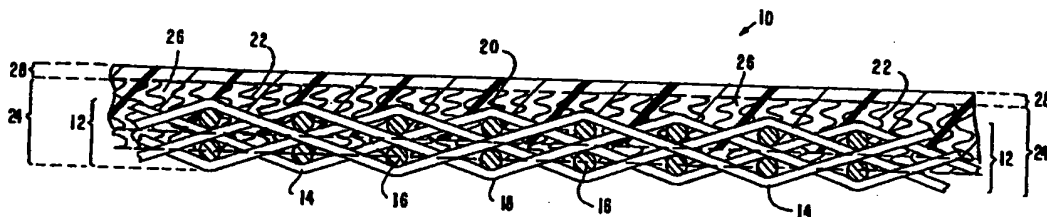


FIG. 1

EP 0 877 119 A3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 97 11 5501

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	EP 0 576 115 A (ALBANY INTERNATIONAL CORP.) 29 December 1993 * the whole document *	1,2,8,9, 11-13, 17,29	D21G1/00
Y	US 4 552 620 A (ADAMS) 12 November 1985 * the whole document *	1,2,8,9, 11-13, 17,29	
Y	EP 0 473 969 A (THOMAS JOSEF HEIMBACH GMBH) 11 March 1992 * the whole document *	1,2,17, 22,23,28	
Y	WO 95 34715 A (ALBANY NORDISKAFILT AB) 21 December 1995 * the whole document *	1,2,17, 22,23,28	
Y	US 5 400 707 A (NEIDER ET AL) 28 March 1995 * the whole document *	1,2,17, 22,23,29	
Y	US 4 701 368 A (KIUCHI ET AL) 20 October 1987 * the whole document *	1,2,17, 22,23,29	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	EP 0 695 827 A (ALBANY INTERNATIONAL CORP.) 7 February 1996 * the whole document *	1,2,7-9, 11,16, 17,29	D21G D21F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 December 1998	Examiner De Rijck, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 11 5501

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-12-1998

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 576115	A	29-12-1993	US 5298124 A	29-03-1994
			AT 136607 T	15-04-1996
			AU 2201492 A	23-12-1993
			CA 2087212 A,C	12-12-1993
			DE 69302136 D	15-05-1996
			DE 69302136 T	02-10-1996
			ES 2088638 T	16-08-1996
			FI 923803 A	12-12-1993
			JP 6057678 A	01-03-1994
			MX 9205185 A	01-07-1993
			NO 924313 A	13-12-1993
			NZ 244196 A	27-04-1994
			ZA 9206593 A	28-02-1994
US 4552620	A	12-11-1985	CA 1237311 A	31-05-1988
			JP 60088193 A	17-05-1985
EP 473969	A	11-03-1992	DE 4028085 C	27-02-1992
			AT 115663 T	15-12-1994
			CA 2050663 A	06-03-1992
			DE 59103872 D	26-01-1995
			DK 473969 T	08-05-1995
			ES 2065588 T	16-02-1995
			FI 914107 A,B,	06-03-1992
WO 9534715	A	21-12-1995	SE 502960 C	26-02-1996
			AU 678324 B	22-05-1997
			AU 2756495 A	05-01-1996
			BR 9508701 A	12-08-1997
			CN 1150830 A	28-05-1997
			EP 0767851 A	16-04-1997
			FI 964973 A	12-12-1996
			JP 10501852 T	17-02-1998
			NO 965266 A	16-12-1996
			NZ 288369 A	19-12-1997
			SE 9402094 A	16-12-1995
			US 5836242 A	17-11-1998
			ZA 9504985 A	14-02-1996
US 5400707	A	28-03-1995	US 5546856 A	20-08-1996
			US 5750259 A	12-05-1998
			US 5694837 A	09-12-1997
US 4701368	A	20-10-1987	JP 1842870 C	12-05-1994
			JP 61252389 A	10-11-1986
			SE 463824 B	28-01-1991

EPO FORM P4489

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 11 5501

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-12-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4701368 A		SE 8601884 A	26-10-1986
EP 695827 A	07-02-1996	US 5601877 A	11-02-1997
		US 5789052 A	04-08-1998
		AU 678899 B	12-06-1997
		AU 2045695 A	21-12-1995
		BR 9502721 A	16-01-1996
		CA 2151329 A	10-12-1995
		CN 1125278 A	26-06-1996
		FI 952507 A	10-12-1995
		JP 8060586 A	05-03-1996
		NO 952277 A	11-12-1995
		NZ 272169 A	24-06-1998
		ZA 9504739 A	26-01-1996

EPO FORM P449

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82